UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/286,418	04/06/1999	TAKAYUKI KIFUKU	Q53818	4951

7590 02/11/2004

SUGHRUE MION ZINN MACPEAK & SEAS
2100 PENNSYLVANIA N W
WASHINGTON, DC 20037

EXAMINER	
BROADHEAD, BRIAN J	

ART UNIT	PAPER NUMBER
3661	

DATE MAILED: 02/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/286,418	KIFUKU, TAKAYUKI	
	Examiner	Art Unit	
	Brian J. Broadhead	3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 November 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 4-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4,5,8-10 and 18-20* is/are rejected.

7)☒ Claim(s) *6,7 and 11-17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 October 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *29*.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed on 12-11-03 does not fully comply with the requirements of 37 CFR 1.98 because: A copy of the reference JP 8-175404 was not included. Since the submission appears to be *bona fide*, applicant is given **ONE (1) MONTH** from the date of this notice to supply the above mentioned omissions or corrections in the information disclosure statement. NO EXTENSION OF THIS TIME LIMIT MAY BE GRANTED UNDER EITHER 37 CFR 1.136(a) OR (b). Failure to timely comply with this notice will result in the above mentioned information disclosure statement being placed in the application file with the noncomplying information **not** being considered. See 37 CFR 1.97(i).

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1, 2, 4, 5, 8 -10, and 18-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Kifuku et al., 5740040.

As per claim 1, Kifuku et al. discloses means of computing an estimated value of static friction of the steering system based on the steering force of a driver on lines 35-

40, on column 20; and means of compensating for the static friction based on this estimated value of static friction on lines 55-60, on column 20.

As per claim 2, Kifuku et al. discloses the static friction of the steering system is estimated by extracting the edge of the steering force detection value on lines 45-46, on column 20.

As per claim 4, Kifuku et al. discloses the static friction of the steering system is estimated by extracting the edge of a motor current on lines 25-28, on column 21.

As per claim 5, Kifuku et al discloses the static friction of the steering system is estimated by extracting a edge of the steering force detection value, the motor angular velocity, the motor back electromotive forces, the steering angular velocity, or the motor current wherein the extraction of the edge is carried out through a high frequency pass filter on lines 38-39, on column 20, and in figure 30.

As per claim 8, Kifuku et al. discloses there is an upper limit for the static friction estimated value on lines 1-5, on column 21.

As per claim 9, Kifuku et al. discloses the static friction compensation having a term proportional to the static friction estimated value obtained by the positive feedback of the static friction estimated value is computes and the static friction of the steering system is compensated by the static friction compensation on lines 47-52, on column 20.

As per claim 10, Kifuku et al. discloses the gain of the positive feedback is set such that the static friction estimated value and the motor output torque become almost

equal to each other on lines 47-52, column 20. Compensating for a friction is producing a force to counteract the frictional force. They would be equal but opposite in direction.

As per claim 18, Kifuku et al. discloses the dynamic friction or inertia of the steering system is compensated based on the angular velocity or angular acceleration of the motor or steering in figure 31, item 13.

As per claim 19 and 20, Kifuku et al. discloses a term for compensating for dynamic friction, a term for compensating for static friction, and a term for the nonlinearity of the motor are weighed so that at least one of them is used in figure 31.

Response to Arguments

2. Applicant's arguments filed 11-26-03 have been fully considered but they are not persuasive. Applicant's own specification on page 17, in the last paragraph, discloses that the angular velocity can be used to detect the static friction. Since the static friction is force, it is the examiner's interpretation that this configuration falls under the definition of torque sensor. Kifuku et al. also describes the same configuration, hence the prior art rejection.

Allowable Subject Matter

1. Claims 6, 7, 11, 12, 13, 14, 15, 16, and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

2. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not disclose the time constant of the high frequency pass filter is made almost equal to the mechanical time constant or acceleration

constant of the motor; the static friction of the steering system is estimated by multiplying an extracted value of the edge by a predetermined function of motor angular velocity, motor back electromotive force or steering angular velocity; and the static friction compensation obtained through the means of compensating for static friction is obtained from a term compensating for the non-linearity of the motor or motor reduction gear.

Conclusion

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Broadhead whose telephone number is 703-308-9033. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William A. Cuchlinski can be reached on 703-308-3873. The fax phone

numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

WILLIAM A. CUCHLINSKI, JR.
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600

BJB
February 9, 2004